

REMARKS

Claims 1-14 are pending. Claims 1 and 11 are currently amended. Upon entry of the amendment, claims 1-14 will remain pending.

Drawings

The Examiner objects to claim 1 as allegedly depicting only that which was known in the art. Applicants respectfully disagree. The Examiner has failed to provide any basis for the opinion that Figure 1 depicts only that which was known in the art. Moreover, the M.P.E.P. § 608,02(g) indicates that it is only appropriate to requirement amendment of the drawing if the figure is **not** labeled.

However, without acquiescing to the basis of the rejection, Applicants have amended the drawing. A replacement drawing is submitted herewith. Accordingly, the rejection should be withdrawn.

Rejections under 35 U.S.C. § 112, second paragraph

Claim 5 is rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. The rejection is obviated by the present amendment.

Rejections under 35 U.S.C. § 102

Claims 1-8 and 10-14, which are directed to an apparatus for arraying particles, are rejected under 35 U.S.C. § 102(e) as allegedly anticipated by Vogel et al., US Publication No. 2003/0098248 (hereinafter “Vogel”) or Talary et al., 2004/0226819 (hereinafter “Talary”). Applicants respectfully disagree and traverse the rejection. However, without acquiescing in any way to the rejection and in order to expedite prosecution of the application, claim 1, from which the remaining claims depend, has been amended without prejudice or disclaimer, thereby obviating the rejection.

Vogel describes a system for positioning and analyzing samples, such as cells (Abstract) within a compartment, which may be opened or closed (§ 0072). In the case of a closed compartment, Vogel teaches that the compartment is bounded by some combination of the **substrate, an electrode, and one or more spacers** (§ 0072). The spacers are used to maintain

the relative position of the substrate and the electrode, such that the electrodes are located opposite one another across a single aperture (§78).

In contrast, Applicants' claims are directed to an apparatus for arraying particles, where the apparatus contains a substrate comprising an array of electrodes; a counter-electrode plate substantially parallel to the array of electrodes; and a flow chamber containing a fluid inlet for permitting a particle-containing fluid to flow between the array of electrodes and the counter-electrode plate, where **the counter-electrode plate forms the lid of the flow chamber**.

Applicants were the first to appreciate that this configuration allows cells to be trapped at arbitrary locations within the chamber. Vogel fails to describe a compartment where the lid of the compartment is formed by the electrode. Thus, Vogel fails to anticipate Applicants' claimed invention.

Talary describes the use of dielectrophoresis to separate mixtures of particles having different dielectric properties (§004). The dielectrophoresis described by Talary is generated using **opposing electrode arrays disposed on a coiled substrate** (§005, §0045). In contrast, Applicants' claims are directed to an apparatus for arraying particles, where **the counter-electrode plate forms the lid of the flow chamber**. Talary fails to describe a compartment where the lid of the compartment is formed by the electrode. Thus, Talary fails to anticipate Applicants' claimed invention.

Rejections under 35 U.S.C. § 103(a)

Claim 9 under 35 U.S.C. § 103(a) as allegedly obvious over Vogel. Claim 3 is rejected as allegedly obvious over Vogel in view of Talary. For the reasons detailed below, Applicants respectfully disagree and traverse the rejection.

The test of obviousness requires that one compare the claimed "subject matter as a whole" with the prior art "to which said subject matter pertains" 35 U.S.C. § 103(a). To establish a *prima facie* case of obviousness, three criteria must be met. First, a suggestion or motivation to modify the reference or combine reference teachings must be present in the references or in the general knowledge present in the art. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. M.P.E.P. 2143. The burden is on the Examiner to show that the references expressly or impliedly suggest all of the claim limitations. M.P.E.P. 2142. "There are three

possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons skilled in the art.” *In re Rouffet*, 149 F.3d 1350, 1357. In the absence of some teaching or suggestion to combine, no *prima facie* case of obviousness can be established, and the rejection is improper and must be withdrawn. *In re Fine*, 837 F.2d 1071, 1074.

Applicants have discovered that single particle trapping can be achieved using a two-layer “posts-and-lid” geometry (page 25, lines 12-17). The particle position is not restricted by the geometry used to create the non-uniform electric field that is used to achieve dielectrophoresis (“DEP”) (page 25, lines 12-17). The cited references failed to recognize this key insight, as Applicants did. Therefore, the cited references, alone or in combination, fail to teach or suggest a substrate comprising an array of electrodes; a counter-electrode plate substantially parallel to the array of electrodes; and a flow chamber containing a fluid inlet for permitting a particle-containing fluid to flow between the array of electrodes and the counter-electrode plate, where **the counter-electrode plate forms the lid of the flow chamber.**

Vogel describes a compartment bounded by a combination of **substrate, electrode, and one or more spacers** (§0072). As discussed above, Vogel fails to teach or suggest a compartment where the lid of the compartment is formed by **the electrode**. Moreover, such a configuration would be inconsistent with the disclosure of Vogel, which teaches that similar electrodes and counter-electrode should be used so that they can generate symmetric electric fields. In particular, Vogel teach that “Preferred electrode arrangements are symmetrical, with **similar electrodes** positioned at similar distances and orientations from each aperture on each side. Symmetrical electrode arrangements generally will create symmetrical electric fields (§0078; emphasis added).” In contrast, Applicants electrodes are dissimilar in that the electrode and counter-electrodes are configured in a “posts-and-lid” geometry. Applicant’s counter-electrode “lid” allows cells to be trapped in arbitrary locations anywhere within the chamber.

Talary fails to remedy the deficiencies of Vogel because like Vogel Talary fails to describe an electrode configuration where **the counter-electrode forms the lid of the flow chamber.**

In sum, none of the references teach or suggest an apparatus for arraying particles, where the apparatus contains a substrate comprising an array of electrodes; a counter-electrode plate substantially parallel to the array of electrodes; and a flow chamber containing a fluid inlet for

permitting a particle-containing fluid to flow between the array of electrodes and the counter-electrode plate, where **the counter-electrode plate forms the lid of the flow chamber.** In the absence of a suggestion that a counter-electrode that forms the lid of the flow chamber *should be made*, and if made, that this counter-electrode would function successfully, the Examiner has failed to establish a *prima facie* case of obviousness. Where the cited references fail to establish a reasonable expectation of success, the obviousness rejection is improper and should be withdrawn.

CONCLUSION

In view of the above remarks, Applicants believes the pending application is in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. Should any of the claims not be found to be allowable, Applicants respectfully request the Examiner to telephone Applicants' undersigned representative at the number below so that a telephonic interview may be scheduled. Applicants thank the Examiner in advance for this courtesy.

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Respectfully submitted,
Electronic signature: /Melissa Hunter-Ensor,
Ph.D., Esq./
Melissa Hunter-Ensor, Ph.D., Esq.
Registration No.: 55,289
EDWARDS ANGELL PALMER & DODGE
LLP
P.O. Box 55874
Boston, Massachusetts 02205
(617) 517-5580
Attorneys/Agents For Applicant